

# A Million Mile Battery

## Are we there yet?

With the arrival of Electric Vehicles (EV's) there comes several questions:

**Battery  
Cost**

**Battery  
Lifetime**

**Recharge  
Time**

**Vehicle  
Range**

Today we are going to have a look at the first two questions which are interlinked.

Enter Prof. Jeffery Dahn from Dalhousie University in Canada.

Dahn is Tesla's battery researcher and one of the world's foremost experts on lithium-ion battery chemistry. Along with his colleagues he has tweaked existing lithium-ion chemistry to achieve, in laboratory tests, battery cells with extraordinary lifetimes, both in terms of calendar lifetimes and charge/discharge cycle lifetimes.

It's best to let [Dr Dahn explain in his own words](#) what revolutionary results are on the table; right now. Dahn's explanation is quite easy for us all to follow and the one hour or so talk is well worth following to the end.

A note about battery costs. Assuming that for argument the cost of a battery normalised in cost per unit of storage capacity (kWh) never decreased. The initial cost is of secondary importance. The true metric of the cost of a battery is the cost over the time that the battery is in service doing useful work of similar value day after day.

Therefore if we could offer a battery that would last twice as long as another with both batteries offering identical new capacity and cost then that battery offering twice the cycle life measured in the number of charge/discharge cycles would be twice as valuable as the other.

Similarly calendar lifetimes are an important metric of value; a battery lasting twice as long is half the real cost of the lesser battery.

The cost of ownership over the useful lifetime is the only true metric of value.

In summary, a battery capable of powering a car for 1 million miles plus having considerable residual value in as a stationary battery at today's \$/kWh is a really really good deal.

When electric vehicles, which in reality are batteries on wheels, park, the owners, confident that they will never wear out their battery will be happy to let their cars engage in Virtual Power Plant (VPP) activities. Activities, which for grid stability, have enormous value.

For more information on VPPs please check out [our VPP Brochure](#).